



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/590,499

08/24/2006

Warren John Smith

608-484

1070

23117 7590 06/12/2008  
NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER

ZUCKER, PAUL A

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

06/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,499	<b>Applicant(s)</b> SMITH, WARREN JOHN	
	<b>Examiner</b> Paul A. Zucker	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 34-70 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 34-47 and 49-70 is/are rejected.
- 7) ☒ Claim(s) 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Current Status***

1. This action is responsive to Applicants' amendment of 5 March 2008.
2. Receipt and entry of Applicants' amendment is acknowledged.
3. Claims 34-70 are pending.
4. The rejections under 35 USC § 112, second paragraph, set forth in paragraphs 1 and 2 of the previous Office Action mailed 14 January 2008 are withdrawn in response to Applicant's amendment.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 34-40, 42- 47 and 49-70 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Wegman et al (US 6,521,783 02-2003).

Instantly claimed is a carbonylation process for the production of a carbonylation product by contacting carbon monoxide with a feed comprising an alcohol and/or a reactive derivative thereof in the vapor phase using an heterogeneous heteropolyacid catalyst comprising one or more metal cations selected from Cu, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd and Pt, characterized in that there is also present in the feed at least 0.5wt% water.

Wegman exemplifies (Column 43, line 25- column 44, line 39) a continuous method for the carbonylation of methanol to acetic acid and methyl acetate. Wegman discloses (Column 44, lines 9- 17) the use of an Ir-Pd replaced phosphotungstic acid supported on silica gel as catalyst (50 wt %). Wegman exemplifies (Column 44, lines 20- 24) reaction in a zone maintained at a uniform temperature of about 235°C and a uniform pressure of about 1000 psig with the synthesis gas having a hydrogen to carbon monoxide molar ratio of 1:1. The GHSV of the syngas fed to the reactor was 6000/hr. Wegman teaches (Column 48, line 43-50) the reaction of mixtures of reactive alcohol derivatives including ethers and esters. Optimum percentage catalyst loading would ordinarily be determined in the optimization of the process.

The difference between the instantly claimed process and that taught by Wegman is that a certain percentage of water is instantly included in the feed stream while Wegman is silent with regard to such inclusion.

Wegman, however, teaches (Column 4, lines 57- column 5, line 41 and Fig. 1) the direct conversion of syngas to methanol and thence to an equimolar mixture of dimethyl ether and water and its direct use as feed stock in the carbonylation process.

One of ordinary skill in the art would have been motivated to adjust the amount of water employed in the process in an effort to optimize the process. There would have been a reasonable expectation of success based on the fact that Wegman teaches the inclusion of water in the process and the routine nature of process optimization.

Thus the instantly claimed process would have been obvious to one of ordinary skill in the art.

***Examiner's Response to Applicants Remarks with Regard to This Rejection***

6. Applicant has presented several arguments with regard to this rejection. The Examiner responds to these below:

- a. Applicant argues that, in Wegman, water is only present in the feed when both methanol and dimethyl ether are present in contrast to the present invention in which the productivity and selectivity of the carbonylation of methanol can be improved by the addition of water. The Examiner agrees but points out that Applicant's claimed process is not limited to the carbonylation of methanol.

- b. Applicant points to Tables 2 and 3 in the specification as demonstrations of the effect of the addition of water to the carbonylation of methanol. The Examiner responds that to the extent to which this same effect is observed with a dimethyl ether carbonylation feed containing water, it is inherent to the process expressly suggested by Wegman '783.
- c. Applicant argues that Wegman '783 does not disclose or suggest the presence of water with, for example, a single feed component such as methanol and that it would therefore be impossible for the ordinary artisan to deduce any benefit to the presence of water in the alcohol feed. The Examiner agrees but again points out that Applicant's claimed process is not limited to the carbonylation of methanol.
- d. Applicant reiterates the previous argument. In response, the Examiner refers Applicant to his previous response.
- e. Applicant argues that that one of ordinary skill in the art would not have been motivated to arrive at the subject matter of the rejected claims based Wegman '783. The Examiner disagrees since Wegman '783 expressly suggests the instantly claimed process as set forth in the rejection of record above.

Applicant's arguments filed 5 March 2008 have been fully considered but they are not persuasive for the reasons indicated above.

7. Claim 41 is finally rejected under 35 U.S.C. 103(a) as being unpatentable over Wegman et al (US 6,521,783 02-2003) ('783) as applied to claims 34-40, 42- 47 and 50-70 above, and further in view of Wegman (US 5,21,140-B1 06-1993) ('140).

Instantly claimed is a carbonylation process for the production of a carbonylation product by contacting carbon monoxide with a feed comprising an alcohol and/or a reactive derivative thereof in the vapor phase using an heterogeneous heteropolyacid catalyst comprising rhodium characterized in that there is also present in the feed at least 0.5wt% water.

The difference between the process taught by Wegman '783 and that instantly claimed is that a catalyst containing rhodium is instantly employed while Wegman '783 does not contemplate the use of rhodium.

Wegman '140, however, teaches (Column 3, line 35-column 4, line 24) a similar carbonylation process and further teaches that rhodium may be employed in the catalyst. Wegman exemplifies (Column 8, lines 59-68, Table 1, entry 2) the use of a rhodium-containing phosphotungstic acid.

Thus one of ordinary skill in the art would have been motivated to replace the catalyst of Wegman '783 with that of Wegman '140 based on the teaching of Wegman '140 that it was suitable for the process of Wegman '783. For that reason, there would also have been a reasonable expectation for success.

Thus the instantly claimed process would have been obvious to one of ordinary skill in the art.

***Examiner's Response to Applicants Remarks with Regard to This Rejection***

8. Applicant refers to the previous rejection for arguments regarding this rejection. In response, the Examiner directs Applicant's attention to his responses to those arguments.

Applicant's arguments filed 5 March 2008 have been fully considered but they are not persuasive for the reasons indicated above.

***Claim Objections***

9. Claim 48 is finally objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

10. Claims 34-70 are pending. Claims 34-47 and 49-70 are finally rejected. Claim 48 is finally objected to.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Zucker whose telephone number is 571-272-0650. The examiner can normally be reached on Monday-Friday 5:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Evonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Paul A. Zucker/  
Primary Examiner, Art Unit 1621